

[54] **OSMOTIC SYSTEM HAVING LAMINAR
ARRANGEMENT FOR PROGRAMMING
DELIVERY OF ACTIVE AGENT**[75] Inventors: **Felix Theeuwes**, Los Altos; **Atul D. Ayer**, Belmont, both of Calif.[73] Assignee: **Alza Corporation**, Palo Alto, Calif.[22] Filed: **Feb. 2, 1976**

[*] Notice: The portion of the term of this Patent subsequent to Mar. 29, 1994, has been disclaimed.

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[58] Field of Search 128/260, 261, 268, 272; 424/19, 20, 21, 22, 33, 15, 37, 28

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[57]

ABSTRACT

An osmotic system for delivering an agent is disclosed. The system comprises a wall surrounding a compartment and has a passageway for delivering agent from the compartment. The wall is formed of a laminae comprising a lamina consisting of a multiplicity of materials in laminar arrangement with a lamina consisting of a material or of a multiplicity of materials to provide a laminated wall that is permeable to agents and maintains its integrity during the delivery of agent. The compartment contains an agent that is soluble in an external fluid and exhibits an osmotic pressure gradient across the wall against the fluid, or the agent has limited solubility in the fluid and is mixed with an osmotically effective compound soluble in the fluid and exhibits an osmotic pressure gradient across the wall against the fluid. In operation, agent is released from the system by fluid being imbibed through the wall into the compartment at a rate controlled by the permeability of the wall and the osmotic pressure gradient across the wall producing a solution containing agent, or a solution of compound containing agent which solution in either operation is released through the passageway at a controlled and continuous rate over a prolonged period of time.

63 Claims, 11 Drawing Figures